

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date
14 October 2004 (14.10.2004)

PCT

(10) International Publication Number
WO 2004/087189 A3

(51) International Patent Classification⁷: **A61P 31/04, A61K 35/74**

GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, IT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(21) International Application Number: PCT/IB2004/000885

(84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(22) International Filing Date: 25 March 2004 (25.03.2004)

(25) Filing Language: Italian

(26) Publication Language: English

(30) Priority Data:
PCT/IT03/00193 1 April 2003 (01.04.2003) IT

Published:

- *with international search report*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

(88) Date of publication of the international search report:
2 December 2004

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(71) Applicants and

(72) Inventors: **PIVA, Andrea** [IT/IT]; Via Carbonesi, 7, I-40123 Bologna (IT). **CASADEI, Gabriele** [IT/IT]; Via Donati, 158, I-47020 Cesena (IT).

(74) Agent: **MARGUTTI, Roberto**; Bognion S.p.A., Viale Lancetti, 17, I-20158 Milano (IT).

(81) Designated States (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,

WO 2004/087189 A3

(54) Title: USE OF BACTERIOCIN FOR THE AMELIORATION OF DIGESTIVE FUNCTIONALITY

(57) Abstract: The subject of the present invention is the use of bacteriocins and/or their producer strains for the amelioration of digestive functionality and for the amelioration of gastrointestinal tract conditions in monogastric organism species.

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A61P31/04 A61K35/74

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data, PAJ, EMBASE, BIOSIS

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	EP 0 384 319 A (VISKASE CORP) 29 August 1990 (1990-08-29) *cf. abstract, page 3, lines 21-53, examples 1-28 on tables 1a/1b on pp. 12 and 13, claims 1-13*	1-10
Y	EP 0 466 244 A (UNILEVER PLC ; UNILEVER NV (NL)) 15 January 1992 (1992-01-15) *cf. abstract, page 3, lines 39-50, claims 1/2*	1-10
Y	WO 97/29645 A (BIOFEED THAILAND CO LTD ; BUNKE PATRIK (SE); LINDBLOM RAGNVALD (TH); K) 21 August 1997 (1997-08-21) *cf. abstract, page 1, first para., page 3, line 32 extending to page 4, line 21, page 5, lines 1-15, page 24, lines 15-31, claims 1,6 and 12-22*	1-10
	----- -/-	

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the International filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the International filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed Invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed Invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *&* document member of the same patent family

Date of the actual completion of the international search

27 September 2004

Date of mailing of the international search report

05/10/2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Stoltner, A

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	<p>PIVA A ET AL: "PEDIOCIN A, A BACTERIOCIN PRODUCED BY PEDIOCOCCUS PENTOSACEUS FBB61" MICROBIOLOGY, SOCIETY FOR GENERAL MICROBIOLOGY, READING, GB, vol. 140, no. PART 4, April 1994 (1994-04), pages 697-702, XP001180469 ISSN: 1350-0872 *cf. introductory part on page 697, page 701, left col., 3rd para.*</p> <p>LEWUS C B ET AL: "FURTHER CHARACTERIZATION OF BACTERIOCINS PLANTARICIN BN, BAVARICIN MN AND PEDIOCIN A" PROCEEDINGS INSTITUTE OF ENVIRONMENTAL SCIENCES, XX, XX, vol. 6, no. 2, 1992, pages 153-174, XP008012433 *cf. abstract, page 171, 3rd para.*</p>	1-10
Y		1-10

Patent document cited in search report		Publication date		Patent family member(s)		Publication date
EP 0384319	A	29-08-1990	AT	272951 T		15-08-2004
			AT	273625 T		15-09-2004
			AT	179307 T		15-05-1999
			AT	204140 T		15-09-2001
			AU	646797 B2		10-03-1994
			AU	4993590 A		30-08-1990
			AU	665646 B2		11-01-1996
			AU	5302394 A		24-03-1994
			CA	2009990 A1		21-08-1990
			DE	69033070 D1		02-06-1999
			DE	69033070 T2		16-12-1999
			DE	69033779 D1		20-09-2001
			DE	69033779 T2		20-06-2002
			DE	69034155 D1		16-09-2004
			DE	69034156 D1		23-09-2004
			EP	1068808 A1		17-01-2001
			EP	1084628 A2		21-03-2001
			EP	0384319 A1		29-08-1990
			EP	0750853 A2		02-01-1997
			ES	2132059 T3		16-08-1999
			ES	2161950 T3		16-12-2001
			FI	105525 B1		15-09-2000
			JP	2300106 A		12-12-1990
			JP	2794318 B2		03-09-1998
			NZ	232512 A		27-09-1993
			NZ	244737 A		27-09-1993
			US	5573797 A		12-11-1996
			US	5573800 A		12-11-1996
			US	5573801 A		12-11-1996
EP 0466244	A	15-01-1992	AU	8030791 A		16-01-1992
			CA	2046452 A1		14-01-1992
			EP	0466244 A1		15-01-1992
			JP	5320017 A		03-12-1993
WO 9729645	A	21-08-1997	SE	510498 C2		31-05-1999
			AT	234019 T		15-03-2003
			AU	721811 B2		13-07-2000
			AU	1819097 A		02-09-1997
			BR	9707510 A		27-07-1999
			CA	2245964 A1		21-08-1997
			CN	1225556 A		11-08-1999
			DE	69719735 D1		17-04-2003
			EP	0881886 A1		09-12-1998
			JP	2001500364 T		16-01-2001
			NZ	330906 A		28-01-2000
			SE	9600568 A		22-08-1997
			WO	9729645 A1		21-08-1997